REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

The continued rejection of claims 1-7 and 9-17 under 35 U.S.C. §103 as allegedly being made "obvious" based on Takao '762 in view of Takao '652 (the US patent issued from the Takao '762 published application) is respectfully traversed.

It is not clear why the Examiner has cited and apparently relied upon both these documents. So far as the undersigned can ascertain, the substantive content of each of these documents is identical. If the Examiner intends to rely upon some difference between the two documents in alleging "obviousness" from their combination, then it is respectfully requested that such difference be particularly noted.

At the outset, the Examiner's attention is drawn to the attached extract from *Nature*, 4 November 2004 at pages 84-87. There, it will be seen that in the "Letters to Nature" section, the applicants describe the presently claimed invention (i.e., a lead-free piezoceramic substance). This publication in a prominent, authoritative scientific journal (*Nature*, Volume 432, PP 84-87, 4 November 2004) is consistent with applicant's belief that the claimed ceramics are an epoch-making material. This superior material clearly was not "obvious" to others of only ordinary skill in the art at the relevant time.

The Examiner is respectfully requested to make the attached publication part of the official record for the appeal that is being concurrently noticed herewith.

Applicant's independent claim 1 requires, among other things, particular ranges of constituent contents for an isotropic perovskite compound represented by a particular formula. Claim 1 also requires that the claimed substance meet numerous other specified conditions including a prescribed restricted range of fluctuation for $E_{33\ large}$ in accordance with a specified formula A1. None of this is to be found anywhere in Takao -- including all of the portions relied upon by the Examiner (4:32-45; 7:6-29 and claim 1).

Indeed, 4:32-45 merely defines the general formula ABO_3. Applicant has never claimed they invented this general formula. Neither does Takao. This portion of Takao merely states that a "main" ingredient for the A-site element may be any of K, Na and/or Li and that the "main" ingredient for the B-site element may be any of Nb, Sb and/or Ta.

At 7:6-29, the anisotropic powders A and B are said to have an anisotropic shape (a longitudinal size is larger compared with a lateral direction or thickness direction) and a "developed plane" occupying the largest area. There is once again, no specific teaching with respect to any proportions for the constituent components of the A and/or B.

Claim 1 (24:7-14) does not provide any additional help in this regard whatsoever.

However, the undersigned has noted a passage at 5:32-49 where it is taught that the "main" ingredient for each of A and B indicates that "one or more of specified elements described above comprise 50 at % or more of the relevant site". This passage also teaches the lack of any particular restriction on the kind of A-site elements other than K and Na and at the B-site other than Nb, Sb and Ta.

In the Examiner's nomenclature, the Takao teaching thus translates into a situation where all of the subscripted variables in a formula presented by the Examiner (presumably coming from some un-specified further portions of Takao '652 in view of the lack of teaching noted for the portions cited by the Examiner) may freely range from 0% to 100% (i.e., the Examiner contends that in his formula x = 0-1, t = 0-1, y = 0-1 and z = 0-1).

Since the Examiner alleges that the formula being relied upon is based on teachings at 4:32-45 and 7:6-29 and claim 1, it is respectfully requested that the rationale supporting such formula be explained with particularity.

Based on the Examiner's own derived formulation and inferences, the Examiner then alleges that "[t]his formula encompasses and thus suggests the claimed formula". It is respectfully submitted that this is clearly not the case.

Only in the sense that Takao does not really suggest any definitive composition for the identified constituent components can it be said that the Takao "formula" encompasses the particularly stated ranges of constituent component content in the applicant's claimed formula.

Clearly a particularly specified finite set can never be made "obvious" from an undefined infinite set of parameters. If so, then literally every invention ever known to man has been, is, and will be "obvious". The earth's basic materials have not changed significantly in a very long time. There is nothing about the generalized universe of virtually infinite possibilities for constituent composition components presented by Takao

that could possibly "suggest" the applicant's particularly claimed specific formula of constituent component content.

This is clearly not a factual situation even remotely similar to those referenced in old and long outdated case law citations contained in the outstanding Office Action. Merely because in some other factual context product claims with numerical ranges that "overlap" prior art ranges may have been held to have been "obvious" does not mean that all product claims with "overlapping" numerical ranges are "therefore" necessarily "obvious" under 35 U.S.C. §103.

The Examiner has not even mentioned the claim 1 requirement for limited fluctuation of $E_{33large}$ or other relationship set forth by equation A1 now present in claim 1.

As an apparent substitute for such analysis of claim 1 recitations, the Examiner infers that a substance created in accordance with the specific formula of claim 1 must inherently have only the same properties as were known for substances made of similar materials. That is, (no matter what the constituent component ratios might have been, such would inherently have exhibited the same properties as now claimed. The Examiner alleges that applicant has not provided "any showing to the contrary". However, the applicant has taught particular advantageous properties never before achieved. The absence of any recognition of such clearly advantageous properties anywhere in the prior art itself provides a clear teaching that applicant's discovered (and claimed) properties were "unexpected" -- and not "obvious" under 35 U.S.C. §103.

Because the Examiner is only asserting "obviousness" (and not "anticipation"), it is assumed that the Examiner has agreed that the cited Takao prior art fails to teach (i.e., anticipate) the oriented (Li, Na, K) (Nb, Ta, Sb) O_3 based ceramics of the present invention. The ceramics of the present invention have surprisingly superior temperature characteristics, i.e. small temperature dependency regarding piezoelectric properties $E_{33large}$, which have never been attained before now while they also have excellent piezoelectric properties, other than the temperature characteristics, comparable to those of Pb (Zr, Ti) O_3 based ceramics, i.e., PZT. Thus, except for the ceramics of the present invention, no ceramics have such superior temperature characteristics along with being lead free piezoceramics. The ceramics of the present invention can be used in a wider temperature range -- thereby being better suited for use in automobile parts. Takao also fails to teach the claimed piezoelectric properties of the superior temperature characteristics. Due to the superior temperature characteristics of the applicant's claimed ceramics, additional electronic circuitry is not required for controlling a generated dislocation. As attested to by the Nature publication, applicant's claimed invention is a significant material breakthrough in this technology.

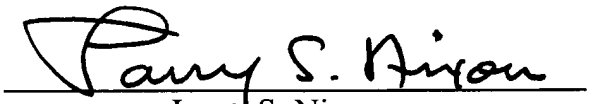
With respect to the many additional recitations of dependent claims 3-7 and 9-12, the Examiner does not even bother to argue that there is any prior art teaching of such. Instead, the Examiner apparently also relies upon the argued "inherent" properties of the Takao ceramic material -- which, according to the Examiner's own formulation, teaches an infinite range of percentage composition for each constituent component in the

substance. It is clearly not logical that all substances made in accordance with Takao's teachings must "inherently" (i.e., necessarily and in all circumstances) possess the attributes now claimed by is the applicant.

Accordingly, this entire application now believed to be allowable and a formal Notice to that effect is respectfully solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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